

SOIKIELLA NOWICKI
(HYMENOPTERA: TRICHOGRAMMATIDAE):
OCCURRENCE IN NORTH AMERICA, DESCRIPTION OF
A NEW SPECIES, AND ASSOCIATION OF THE MALE

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Abstract.—*Soikiella* is reported from North America for the first time. *Soikiella occidentalis* NEW SPECIES is described and compared to the European *S. mongibelli* Nowicki, its only congener. Although *Soikiella* has been known only from females, males of both species have now been discovered and that of *S. occidentalis* is described and figured.

Key Words.—Insecta, Hymenoptera, Trichogrammatidae, *Soikiella*

Soikiella is one of the most uncommonly collected genera of Trichogrammatidae. Previously, it was known from a single species, *S. mongibelli* Nowicki, described from Sicily in 1933. We have found a second species occurring at several locales in western North America. This species, *S. occidentalis* NEW SPECIES, is described below and characteristics of the previously unknown males of *Soikiella* are provided. The hosts of *S. occidentalis* are unknown. A female of *S. mongibelli* from Israel in the University of Naples at Portici is labeled as ex egg of *Machimus negevensis* Theodor (Diptera, Asilidae). This is the only host association recorded for the genus.

SOIKIELLA NOWICKI

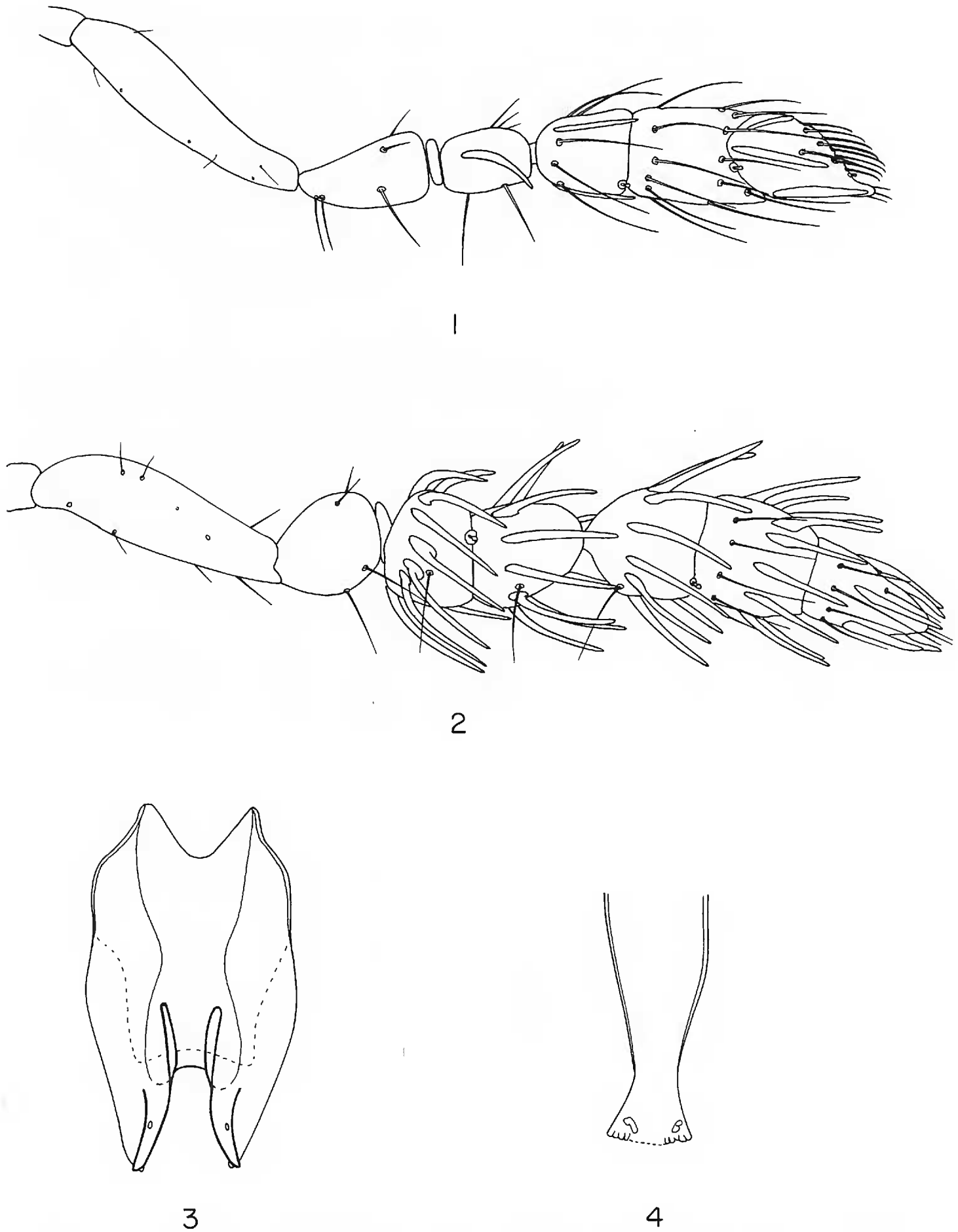
Soikiella Nowicki 1933:1; 1935:579. Peck et al. 1964:109. Doutt & Viggiani 1968: 545.

Type Species.—*Soikiella mongibelli* Nowicki, by original designation.

Description.—Antenna sexually dimorphic (Figs. 1, 2); female with one anellus, one funicle and three club segments, antenna normally setate; male with two funicle segments and with numerous exerted, prominent seta-like sensilla on funicle and club. Maxillary palp one-segmented. Wing broad, oblatly rounded apically; vein tracts distinct; venation with a broad, relatively short marginal vein and a short, broad, bilobed stigmal vein; RS-1 absent. Ovipositor very short, broad, gonoplags short, subtruncate apically. Male genitalia (Figs. 3, 4) typical of Trichogrammatini (as defined by Viggiani 1971): genital capsule open dorsally, gonostyli and volsellae present, aedeagus and apodemes distinct.

Relationships.—*Soikiella* has been difficult to place to subfamily, partly due to lack of males. The discovery of males of both known species positions the genus in the Trichogrammatinae as currently defined by Viggiani (1971).

Nowicki (1933) originally placed *Soikiella* within the Trichogrammatinae despite its antennal formula (with a single funicular segment in the female) which it shares with several genera of Oligositinae. Within the Trichogrammatinae, he considered it closest to *Ufens*, based primarily on wing characters. In their revision of the family, Doutt & Viggiani (1968) related *Soikiella* to *Bloodiella*, a member of the Oligositinae, but noted that its fore wing was most similar to that in *Zagella*, a relative of *Ufens*.



Figures 1–4. *Soikiella occidentalis*. 1. Antenna, female holotype (lateral). 2–4. Male from Oak Glen, California. 2. Antenna (lateral). 3. Genital capsule (dorsal). 4. Aedeagus.

The male of *Soikiella* makes relationship to *Bloodiella* unlikely. In *Bloodiella* the antennae are not sexually dimorphic, and the male genitalia are different. Viggiani (1971) associated *Bloodiella* with *Chaetostricha* and related genera in the Oligositinae based on the strongly reduced male genitalia in which many of the structures are presumably fused into a single tubular unit. The genitalia of *Soikiel-*

la, although considerably deviant, retain the basic features considered characteristic of the Trichogrammatinae (Viggiani 1971). The presence of two funicular segments in the male also argues against oligositine membership.

Affinities of *Soikiella* within the Trichogrammatinae are not clear. The similarity of its fore wing structure to that in *Ufens* and *Zagella* is not compelling evidence for relationship. The correspondence is based on the relatively broad wing, and the compact, robust venation. Several genera of Trichogrammatidae have similar wings. Although it is premature to suggest close relationship, we do note that *Soikiella* shares certain similarities with *Paratrichogramma*. They are the only genera in the family in which the male adds a funicular segment to the female norm. Also, the fore wings of both lack an RS-1, the marginal vein is of similar shape and relative length, and the stigmal vein is short, sessile and apically bilobed. Other venation characteristics differ, however; see Doutt & Viggiani (1968) for illustrations. The male genitalia also are different. The only features shared are presumably plesiomorphies for the Trichogrammatinae as a whole.

Association of Sexes.—Despite the lack of reared specimens we are confident that males of both species are correctly linked to females given the congruence in wing characters, color pattern, overall body shape and many other specific structural traits. Both sexes are uncommon, especially males. So far, specimens have been collected only by sweeping vegetation or in pan traps. Rarely have we encountered more than one individual per collection. The two sexes of the new species, *S. occidentalis*, have never been collected together (see Material Examined). A male and female of *S. mongibelli* were taken together once in Italy in a sweep sample at Camigliatello Silano, Calabria by Pinto.

KEY TO SPECIES OF *SOIKIELLA*

- Female funicle without placoid sensilla; scutellum with anterior pair of setae $<0.5\times$ as long as posterior pair; male antenna with F2 subquadrate in outline, not tapering from basal third, and with single erect seta on F1 and F2 elongate, $>2.0\times$ length of equivalent seta on C1. (Europe) . . . *mongibelli*
- Female funicle with one linear placoid sensillum (Fig. 1); scutellum with anterior pair of setae $>0.67\times$ as long as posterior pair; male antenna (Fig. 2) with F2 subtrapezoidal in outline, tapering from basal third to apex, and with single erect seta on F1, F2, and C1 elongate, subequal in length. (North America) *occidentalis*, NEW SPECIES

SOIKIELLA OCCIDENTALIS VELTEN & PINTO, NEW SPECIES

Types.—Holotype female. USA. WASHINGTON. YAKIMA Co.: Yakima, 20 Jul 1988, sweeping primarily *Salix* along river, R. Velten. The holotype is deposited in the U.S. National Museum of Natural History, Washington, D.C. Paratypes: 3 females with same data of holotype; in the Canadian National Collection, Ottawa (1), and the Department of Entomology, University of California, Riverside (2). All types slide mounted except one paratype (UCR) on a card.

Description.—Body length and color notes from critical point dried specimens; other characters described from specimens slide mounted in Canada Balsam.

Female: COLOR. Dark brown with head orange dorsad of toruli, antenna with flagellar segments and pedicel orange brown, scape darker. Legs with trochanters, apex of femora, base and apex of tibiae and tarsi pale yellow brown. Thoracic dorsum with an orange-yellow line medially from just anterior

to middle of mesoscutum posterior to juncture with gaster, and along posterolateral margins of mesoscutum. Eyes and ocelli dark red. Variation slight in specimens examined, consisting of varying degree of suffusion of lighter areas with predominant brown color. BODY. Length 0.62–0.70 mm. Elongate, parallel sided, slightly flattened (especially dorsum of gaster), gaster evenly rounded apically, $1.7 \times$ length of thorax. HEAD. Antenna (Fig. 1) with relative length of scape, pedicel, funicle and club 26.5:13.5:9.5:36.5 ($n = 5$); single funicular subcylindrical, slightly narrower at base than apex, one placoid sensillum obliquely oriented on outer side of segment, curving dorsad apically, free of surface at apex; club compact less than one-third as wide as long, C1 as wide as long, length nearly uniform on all surfaces, C2 and C3 asymmetrically joined, C2 shortest on outer surface, approximately two-thirds greatest length on inner surface; C3 asymmetrically narrowing to apex, ventral surface strongly curved, dorsal surface straight, extended dorsoapically as a narrow tubular projection, C2 and C3 subequal in length, each approximately $1.7 \times$ as long as C1, C1 and C2 each with 2 placoid sensilla, C3 with 4 placoids, two extending onto dorsal surface of apical projection, one curved along ventral margin; ventral surface of C3 with many apically directed hollow setiform sensilla; all club segments with scattered setae. Mandibles tridentate. Maxillary and labial palpi one segmented, the latter $0.3 \times$ length of former. THORAX. Mesoscutum lightly reticulate, scutellum obsolescently so, each with two pair of elongate narrow setae, those on scutellum with anterior pair at least two-thirds length of posterior. Mesophragma not extending beyond segment II of gaster. Relative length of coxa, trochanter, femur, tibia and (tarsal segments) as follows ($n = 1$)—fore leg 27:12:41:41: (11:13:15); middle leg 20:13:41:54: (14:15:13); hind leg 32:18:45:57: (13:15:15); relative length of fore, middle and hind tibial spurs 7, 13, 13, respectively; hind tibia with short subapical spine on dorsal surface. Fore wing slightly fumate at base, broad, width averaging 0.58 its length (measured from apex of tegula), oblately rounded apically, widest at apical fourth; marginal vein short, terminating abruptly apically, attaining 0.36 length of wing; stigmal vein broad, weakly bilobed apically, only slightly constricted at base; relative length of subcostal, premarginal, marginal and stigmal veins 29.5: 16.0: 16.0: 8.0, respectively; fringe short, longest seta varying from 0.06 – $0.1 \times$ wing width. Hind wing with three distinct setal tracts on disk, posterior tract with shorter setae than others, all tracts attaining wing apex; longest fringe setae approximately $0.8 \times$ greatest wing width. GASTER. Ovipositor short, broad, occupying apical fourth of gaster, projecting only slightly beyond apex, 0.67 – 0.78 hind tibial length; gonopods short, subtruncate apically. Hypogynium not developed, consisting of a simple, slightly rounded flap overlying basal third of ovipositor.

Male.—Color pattern similar to female in single male examined except noticeably darker than darkest female. Differs structurally from female in having a somewhat blunter abdominal apex and distinct antennae (Fig. 2). Antennal characters as follows—F1 and F2 subequal in length, F1 slightly wider than long (1.1:1.0), widest at base, F2 slightly longer than wide (1.1:1.0), widest at basal third, tapering from there to apex; club approximately one-third as wide as long; segments more loosely connected than in female, roughly symmetrical on all surfaces and subequal in length, variation less than one-tenth segment length; funicle and club segments each bearing a ring of elongate, hollow, robust and apically directed spiniform sensilla (appearing like elongate, elevated placoid sensilla), those on C3 appressed, contiguous with surface for approximately half their length, those on other segments free beyond base; C2 and C3 also with several pale apically directed setae; C1 and both funicle segments each with a single long, heavy seta perpendicular to dorsolateral surface. Genitalia (Figs. 3, 4) less than half the length of hind tibia, broadly ovoid, width approximately half its length, broadly notched at base; volsellae dorsal to gonostyli, curved, highly sclerotized along entire length, unarmed at apex, connected laterally to capsule sides; gonostyli blunt apically; length of aedeagus including apodemes $0.7 \times$ that of genital capsule, apodemes diverging anteriorly, elongate, $1.5 \times$ length of aedeagus, aedeagus abruptly broadened to apex.

Diagnosis.—*Soikiella occidentalis* is separated from *S. mongibelli* by characters given in the key.

Range.—Known from scattered locales from British Columbia to southern California. There is a single record from eastern Wyoming. The species occurs in riparian and non-riparian zones. In southern California it has been collected in desert, chaparral and coniferous habitats.

Material Examined.—12 females, 2 males. CANADA. BRITISH COLUMBIA. Australian (between Williams Lake & Quesnel, along Fraser River), 10 Mar 1953, "*Pseudotsuga taxifolia* cone associate,"

1 female. USA. CALIFORNIA. *GLENN Co.*: 8.1 km (5 mi) N of Elk Creek, 8 Jun 1984 & 5 Jun 1987, J. Pinto, sweeping, 2 females. *LOS ANGELES Co.*: Cucamonga Wilderness Area, San Gabriel Mts. (between Cucamonga & Etiwanda peaks), 2683 m (8800 ft), 26 Aug 1989, J. Pinto, sweeping conifers & *Castanopsis*, 1 female. *RIVERSIDE Co.*: Hills on west end of Menifee Valley, Sep 1988, J. Pinto, yellow pan trap under *Eriogonum gracile* Benth., 1 female. *SAN BERNARDINO Co.*: Fish Creek Trail, San Bernardino Mts, 30 Jul 1981, G. Gordh, sweeping, 1 female. Oak Glen, 1500 m, 5/15 Aug 1985, R. Wagner, malaise trap, 1 male. 11.3 km (7 mi) E of Phelan (Baldy Mesa), 13/25 Jul 1981, J. Huber, yellow pan trap, 1 female. WASHINGTON. *KLICKITAT Co.*: Goldendale, 21 Jul 1988, J. Pinto, sweeping primarily *Salix* & *Populus*, 1 female. *YAKIMA Co.*: Yakima (see types above). WYOMING. *PLATTE Co.*: Chugwater, 16 Aug 1986, J. Pinto, sweeping along Chugwater Creek, 1 male.

ACKNOWLEDGMENT

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